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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,318	12/18/2001	Joon Ki Hong	10729-P67426US0	8219

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EXAMINER

HA, NATHAN W

ART UNIT PAPER NUMBER

2814

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/017,318

Applicant(s)

HONG, JOON KI

Examiner

Nathan W. Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) was filed with the mailing date of the application on 12/18/01 is being considered by the examiner.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 6,380,615, hereinafter Park.) and in view of Applicant's Admitted Prior Art (hereinafter, AAPA.).

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In regard to claim 1, in fig. 12, Park discloses a stack chip module including:

a substrate 50 having a predetermined-size groove 52 on one side and a circuit pattern 51 with one end being adjacent to the groove;

a first semiconductor chip 20 adhered in the groove of the substrate by adhesive and having a plurality of center pads 21 and a plurality of edge pads, not numbered, electrically connected to each other, on an upper part thereof;

a plurality of metal wires 70 for electrically connecting the circuit pattern of the substrate and the edge pads of the first chip, respectively;

a second semiconductor chip, also numbered 20, having a plurality of center pads, also numbered as 21, corresponding to the plurality of the center pads on the upper part of the first chip and the formative side being opposite to that of the first chip;

a plurality of the bumps, not numbered, see col. 4, lines 66-67, interposed between the center pads of the first and second chips for joining and electrically connecting the center pads; and

a molding 90 at the sides of the second semiconductor chip including the metal wires, the edge pads of the first chip, and the circuit patterns of the substrate.

Park, however, does not explicitly discuss the material of the metal wires 70. It should be noted that gold material is being used widely in the art of semiconductor devices to improve the electrical connections since it has high conductivity constant. For example, the AAPA, in fig. 1, discusses the use of gold as metal in bond wires 5a.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the gold material in Park in order to take the full advantage as mentioned above.

In regard to claims 2 and 4, the combination of Park and AAPA does not expressly disclose that the second chip has a size that fits inside of the edge pads of the first chip and the height of the solder bumps.

At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the size of the second chip and adjust the height of the bumps because applicant has not disclosed that this size provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with either size because it performs the same function of a stack chip and electrically connecting between the chips.

Therefore, it would have been obvious to one of ordinary skill in the art to modify Park and AAPA to obtain the invention as specify in claims 2 and 4.

Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) .

In regard to claim 3, Park further discloses the bumps are solder bumps; see col. 4 lines 66-67, and fig. 10.

In regard to claim 5, Park further discloses the possibility to add a heat sink on the second stack chip; see col. 2 and lines 53-56.

In regard to claim 6, Park further discloses that the substrate 50 is a printed circuit board having a shape that can be put into a socket; see fig. 13.

In regard to claim 7, Park further discloses the substrate comprises a second heat sink 110 on the bottom of the groove; see fig. 19 and claim 10 of Park.

In regard to claims 8-9, Park further discloses the substrate 50 includes grooves, not numbered, arranged on the both sides thereof in a jig-jag form, and semiconductor chips 20 are mounted in each groove; see fig. 18 and claim 11 of Park.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (703) 305-3507. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and 308-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha
September 19, 2002


OLIK CHAUDHURI
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